Remarks/Arguments

Favorable consideration of this application is respectfully requested in view of the foregoing amendments and the following remarks.

Claims 1-25 are pending in the application. Claims 1, 2 and 11-25 have been withdrawn from further consideration pursuant to 37 CFR §1.142(b) as being drawn to a non-elected invention. Accordingly, Claims 1, 2 and 11-25 have been cancelled without prejudice. Claims 4, 7 and 10 have been amended. Claims 3, 5, 6, 8 and 9 have been cancelled without prejudice. New Claims 26-28 have been added. Support for the language in Claim 26 is found in the specification at Pages 2 and 6. Support for the language in Claims 27 and 28 is found in the specification at Page 2. No new matter has been added.

Claims 3, 4, 6, 7, 9 and 10 have been objected to because they depend from a non-elected base claim, use an undefined abbreviation and the word "been" in Claim 10 is misspelled. As noted above, Claims 3, 6 and 9 have been canceled so the rejection no longer applies to Claims 3, 6 and 9. To address the objection to Claims 4, 7 and 10, Claim 4 has been amended to incorporate the feature "SEQ ID NO:2" recited in Claim 2 and to define the meaning of the abbreviation pCAR, Claim 7 has been amended to depend from Claim 4 and Claim 10 has been amended to correct the misspelling of the word "been".

In view of the above, withdrawal of the objection to Claims 4, 7 and 10 is respectfully requested.

Claims 3 and 4 have been rejected under 35 U.S.C. §101. The Examiner contends that the claimed invention is directed to non-statutory subject matter. It is noted that Claim 3 has been cancelled so this rejection no longer applies to Claim 3. With respect to Claim 4, this claim has been amended to recite "An isolated DNA sequence".

In view of the above, withdrawal of the rejection of Claim 4 under 35 U.S.C. §101 is respectfully requested.

Claims 3-10 have been rejected under 35 U.S.C. §112, first paragraph, as allegedly failing to comply with the written description requirement and under 35 U.S.C. §112, first paragraph, based on an alleged lack of enablement of the specification.

While not necessarily agreeing with the grounds for the rejection to facilitate prosecution, Claims 3, 5, 6, 8 and 9 have been cancelled, Claim 4 has been amended to recite "SEQ ID NO:2" and Claim 7 has been amended to depend from Claim 4.

In view of the above, withdrawal of the two rejections of Claims 4, 7 and 10 under 35 U.S.C. §112, first paragraph, is respectfully requested.

Claims 8-10 have been rejected under 35 U.S.C. §112, second paragraph, as being indefinite. In response, it is noted that since Claims 8 and 9 have been cancelled the rejection only applies to Claim 10. Claim 10 has been amended to recite "A host cell..." in place of "Host cells..."

In view of the above, withdrawal of the rejection of Claim 10 under 35 U.S.C. §112, second paragraph, is respectfully requested.

Claims 3 and 4 have been rejected under 35 U.S.C. §102(b) as being anticipated by Fechner et al., *Gene Therapy*, Vol. 6, pp. 1520-1535 (1999) (Fechner et al.). With respect to Fechner et al. the Examiner states:

> "Fechner et al. teaches various polypeptides which mediate adenoviral transduction (i.e., CAR proteins from human , mouse, rat dog and pig; see especially Figure 4). In the caption to Figure 4, Fechner et al. also provides Accession numbers for nucleic acids encoding each of the polypeptides disclosed in the Figure. At least to the extent that the claims encompass nucleic acids encoding variants, which include substitutions, additions, deletions, fusions and truncations (specification page 6, lines 1-2) of the porcine polypeptide disclosed in the instant application, the nucleic acids disclosed by Fechner et al. anticipate the subject matter of claims 3 and 4. Thus, the claims are unpatentable over Fechner et al."

Applicants traverse this rejection and respectfully submit that Claim 4 as amended is not anticipated by Fechner et al. It is noted that Claim 3 has been cancelled so the rejection of Claim 3 is no longer applicable. Amended Claim 4 recites an isolated DNA sequence which encodes a C-terminally truncated porcine CAR having the amino acid sequence as set forth in SEQ ID NO:2. In contrast, while Fechner et al. describe sequences in Figure 4 (see listed Accession Numbers), Fechner et al. do not identically describe a C-terminally truncated pCAR having 261 amino acids as set forth in SEQ ID NO:2. Some differences between the sequences described in Fechner et al. and SEQ ID NO:2 of amended Claim 4 are discussed below. For example, AF109645 (dog CAR) possesses amino acids Arg, Phe and Lys at positions 6, 16 and 42, respectively, whereas SEQ ID NO:2 recited in amended Claim 4 possesses amino acids Cys, Leu and Arg at positions 6, 16 and 42, respectively. AF109643 (rat CAR2) possesses amino acids Phe, Ser and Arg at positions 16, 18 and 28, respectively, whereas SEQ ID NO:2 recited in amended Claim 4 possesses Leu, Arg and Met at positions 16, 18 and 28, respectively. AF109644 (rat CAR1) possesses amino acids Phe and Ser at positions 16 and 18, respectively, whereas SEQ ID NO:2 recited in amended Claim 4 possesses Leu and Arg at

positions 16 and 18, respectively. AF109646 (pig CAR) possesses amino acids Arg, Val and Asn at positions 6, 257 and 261, respectively, whereas SEQ ID NO:2 possesses amino acids Cys, Ile and Arg at positions 6, 257 and 261, respectively. AF124598 (human CAR2) possesses amino acids Val and Phe at positions 14 and 16, respectively, whereas, SEQ ID NO:2 recited in amended Claim 4 possesses amino acids Ala and Leu at positions 14 and 16, respectively. hCAR1 in Figure 4 of Fechner et al. also shows a difference from SEQ ID NO:2 recited in amended Claim 4. For example, hCAR1 possesses amino acids Val and Glu at positions 14 and 27, respectively, whereas SEQ ID NO:2 recited in amended Claim 4 possesses amino acids Ala and Gln at positions 14 and 27, respectively. Accordingly, none of the sequences described in Fechner et al. identically describes the C-terminally truncated pCAR set forth in SEQ ID NO:2 of amended Claim 4. Accordingly, Fechner et al. does not anticipate amended Claim 4.

In view of the above, withdrawal of the rejection of Claim 4 as being anticipated by Fechner et al. under 35 U.S.C. §102(b) is respectfully requested.

Claims 3-10 have been rejected under 35 U.S.C. §102(b) as being anticipated by WO 98/33819 (Tomko et al.). In particular, the Examiner states:

> "Tomko et al. teaches nucleic acids encoding polypeptides which mediate adenoviral transduction (i.e., CAR proteins from human and mouse; see especially SEQ ID NO:1 and 3). At least to the extent that the claims encompass nucleic acids encoding variants, which include substitutions, additions, deletions, fusions and truncations (ID.) of the porcine polypeptide disclosed in the instant application, the nucleic acids disclosed by Tomko et al. anticipate the subject matter of claims 3 and 4."
>
> Tomko et al. further teaches vectors and plasmids comprising the disclosed nucleic acids, according to Claims 5-7, and host cells comprising said plasmid vectors, according to Claims 8-10 (see especially beginning the first full paragraph on Page 34 and continuing through the first full paragraph on Page 35).

Applicants respectfully traverse this rejection and submit that Tomko et al. does not anticipate amended Claims 4, 7 and 10 (Claims 3, 5, 6, 8 and 9 cancelled). Some differences between the sequences described in Tomko et al. and SEQ ID NO:2 of amended Claim 4 are discussed below. SEQ ID NO:2 (hCAR) in Tomko et al. possesses amino acids Val and Phe at positions 14 and 16, respectively, whereas SEQ ID NO:2 recited in amended Claim 4 possesses amino acids Ala and Leu at positions 14 and 16, respectively. SEQ ID NO:4 (mCAR) described in Tomko et al. also possesses amino acids Val and Phe at positions 14 and 16, respectively, whereas SEQ ID NO:2 recited in amended Claim 4 possesses amino acids Ala and Leu at positions 14 and 16, respectively. Further, Tomko et al. does not describe a C-terminally

truncated pCAR having 261 amino acids. Accordingly, since Tomko et al. does not identically describe SEQ ID NO:2 recited in amended Claim 4, it does not anticipate amended Claim 4.

In view of the above, withdrawal of the rejection of Claims 4, 7 and 10 as being anticipated by Tomko et al. under 35 U.S.C. §102(b) is respectfully requested.

Claims 3-10 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Fechner et al. as applied to Claims 3 and 4 and further in view of Tomko et al. In particular, the Examiner states:

> "As described above, Fechner et al. teaches nucleic acids encoding various polypeptides which mediate adenoviral transduction. Fechner et al. does not teach plasmids, vectors or host cells comprising said nucleic acids.
>
> Tomko et al. teaches expression or recombinant CAR proteins by inserting DNA encoding CAR proteins into expression vectors and introducing the expression vector into a host cell (see especially the first full paragraph on page 35). It would have been obvious to one of ordinary skill in the art at the time the invention was made to construct an expression vector and host cell comprising the nucleic acids of Fechner et al. according to the teachings of Tomko et al. in order to express recombinant CAR proteins.
>
> Motivation to combine these teachings comes from Tomko et al. who teaches a variety of uses for the recombinant protein; particularly to raise antibodies which can be used in quantitative or qualitative assays for CAR proteins (page 39, second full paragraph), including diagnostics. Absent evidence to the contrary, one would have a reasonable expectation of success in combining these teachings because recombinant protein expression is routine in the art and Tomko et al. demonstrates successful heterologous expression of two CARs (see especially Example III). Thus, the claimed invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made."

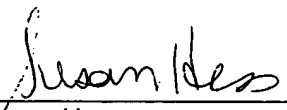
Applicants respectfully traverse the rejection and submit that amended Claims 4, 7 and 10 (Claims 3, 5, 6, 8 and 9 cancelled) are not rendered obvious by the combination of Fechner et al. and Tomko et al.

Fechner et al. nor Tomko et al. neither teach nor suggest a C-terminally truncated pCAR having an amino acid sequence as set forth in SEQ ID NO:2 recited in amended Claim 4. Accordingly, amended Claim 4 and Claims 7 and 10, which are dependent therefrom, are not rendered obvious by the combination of Fechner et al. and Tomko et al.

In view of the above, withdrawal of the rejection of Claims 4, 7 and 10 as unpatentable over the combination of Fechner et al. and Tomko et al. under 35 U.S.C. §103 is respectfully requested.

Applicants respectfully request that a timely Notice of Allowance be issued in this case.

Respectfully submitted,



Susan Hess
Attorney for Applicants
Reg. No. 37,350
(862) 778-7859

Novartis
Corporate Intellectual Property
One Health Plaza, Building 430
East Hanover, NJ 07936-1080

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